

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)

50269-0690

CERTIFICATE OF TRANSMISSION VIA EFS-WEB

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on July 20, 2007 by /Martina Placid/
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Application Number

10/812,719

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First Named Inventor

Pavel Berkhin

Art Unit

2163

Examiner

Hung T. Vy

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐

applicant/inventor.

/Yury A. Perzov/

Signature

☐

assignee of record of the entire interest.

See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

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July 20, 2007

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

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*Total of 1 forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

REMARKS/ARGUMENTS

As will be seen from the discussion below, the rejections of claims 7-14 under 35 U.S.C. § 112 first paragraph are improper because the subject matter of Claims 7-14 is fully supported in the specification. The rejections of claims 7-14 under 35 U.S.C. § 112 second paragraph are improper because Claim 7 is definite. The rejections under 35 U.S.C. § 102(b) of claims 7-9 and 12-14 are improper because the cited reference Page (U.S. patent 6,285,999) does not anticipate the claimed invention. Moreover, the rejections of claims 10-11 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Page in view of Haveliwala at al do not establish a *prima facie* case of obviousness.

There are clear errors of fact and of law in the Examiner's rejections that make the rejection improper and without basis.

Pending Rejections

As a preliminary matter, it is not clear what rejections remain pending in the present application. In Applicants' last response, Applicants explained why all rejections should be withdrawn. In the subsequent Advisory Action, the only rejection that is mentioned is the rejection of Claim 7 for failure to satisfy the Written Description requirement. Presumably, the other rejections were withdrawn. However, for the purpose of completeness, Applicants address all issues raised in the Final Office Action, even though some of those issues may have already been overcome.

Issue 1 – Written description support for Claim 7

Claim 7 was rejected on based on the assertion that the specification does not describe: “at least some pages, within the collection, that do not belong to the set of one or more pages”, “current page”, “next page”, “outgoing link from the current page to a next page that belongs to the collection”, “establishing the next page as the current page”, and “on the authority weights associated with the pages that match the search query”. However, each of these terms is fully supported by the original specification.

Specifically, the Specification explains that the bookmark coloring process takes as an input a graph representing a collection of hyperlinked pages. “Where a collection of items can be represented by a graph, as a collection of hyperlinked pages can, an authority vector might represent the set of authority values for a vertex of the graph.” ll. 17-19 P. 3. The bookmark coloring process also takes as an input a **set** of one or more pages in the collection which contain initial color loading (authority weights). The set of one or more pages is referred to as bookmarks in the specification. “Inputs to a BCP might include a

graph, a set of nodes for initial color loading (which are “bookmarks” in many examples herein), viscosity parameters (indicating how much “color” sticks and how much is passed on), propagation thresholds, and other parameters.” P 15 lines 16-17. The set of one or more pages (bookmarks) are part of the collection.

Thus, as explained in the Specification, while every page in the set of one or more pages belongs to the collection, not every page in the collection belongs to the set of one or more pages. Using set theory notation the relationship between collection and set can be expressed as **set \subset collection**. Therefore, the specification describes “at least some pages, within the collection, that do not belong to the set of one or more pages.”

Fig. 4 of the specification provides a written description of subject matter “current page”, “next page”, “outgoing link from the current page to a next page that belongs to the collection”, and “establishing the next page as the current page.” Fig. 4, details pseudo code of bookmark coloring according to one embodiment of the invention. In Fig. 4 a single bookmark is used, with a color loading of 1. “Conceptually, the bookmark-coloring process suggested by (Equation 10) can be implemented by a program according to Fig. 4, with $w=1:p=BCP(b,\alpha)$ and $BCP(b, \alpha)=BC(b,1, \alpha)$. The recursion over all links from b to j can be cut off when the color amount becomes so small that its further distribution is infeasible or not likely to significantly affect the results.” ll 27-31 p. 15

Specifically subject matter “current page”, “next page”, and “outgoing link from the current page to a next page that belongs to the collection” is shown in the control portion of the for loop expression “for all links $b \rightarrow j$ in E”. The “for loop” traverses outgoing links from a bookmark b or the “current page” to determine page j or the “next page”. The condition “in E” indicates that only extant links in the adjacency matrix are followed. E is an adjacency matrix detailing links between pages in a collection of pages for which authority weights are to be established. “Let $E=E(W)$ be an edge indicator or an adjacency matrix for a graph W, wherein $E_{ij}=1$ in the matrix E if there is a link i-j between page i and page j and $E_{ij}=0$ if there is not a link.” p. 3 lines 27-29 . The collection of pages for which authority weights are to be established are represented by a directed graph consisting on a set of nodes and edges and an adjacency metrics details connection between every node in the graph. Therefore the specification provides support for subject matter “outgoing link from the current page to a next page that belongs to the collection”.

The body of the loop “ $p=p+BCP(j,(1-\alpha)\cdot w/\deg(b), \alpha)$ ” provides support for subject matter “establishing the next page as the current page”. The body of the loop shows a recursive call to the BCP process $BCP(j,(1-\alpha)\cdot w/\deg(b), \alpha)$. In the recursive call j which is the “next page” becomes b a bookmark or “current page”, whenever the BCP process is executed in response to the recursive call.

The subject matter “on the authority weights associated with the pages that match the search query” recited in Claim 7 is described in the specification in the following excerpts: “A search might proceed as follows: a searcher presents a query (e.g. “new york police”) to a search engine and the search engine returns a set of hits (e.g., results, pages, documents, items, etc.) that contain terms of a query (or otherwise “match” the query).” p. 2 ll. 15-17. “With the authority values in hand, a search engine can optimize search results by ranking hits comprising the search results to better match top pages to likely user intent, e.g., relevancy.” p.3 ll. 4-5. The excerpts describe “presenting the search results that list the pages that match the said search query based, at least in part, on the authority weights associated with the pages that match the search query.”

Based on the foregoing, the subject matter identified by the Office Action is described in the specification. The applicant respectfully requests the rejection be withdrawn.

Issue 2 – Claims 7-14

Claims 7-14 are definite under 35 U.S.C. § 112 second paragraph. Specifically, the Office Action asserts that it is not clear how assigning weights to the documents in the set also allows assigning weights to the documents that do not belong to the set. However, on this point the Specification is very clear. The authority weights assigned to the documents in the “set” are used as the basis for assigning authority weights to the documents that do not belong to the set. In fact, assigning weights to documents in the collection based on weights assigned to documents in the set is the entire point of the bookmark coloring process that is described throughout the specification.

Issue 3 – Claims 7-9 and 12-14

Claims 7-9 and 12-14 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Page (“U.S. Patent No. 6,285,999” hereinafter “Page”). While Page describes the computation of a PageRank vector, Page fails to teach every feature of new Claim 7.

Page describes the computation of a PageRank vector and a personalized PageRank vector using power iteration techniques while Claim 7 of a computation using a novel recursive method which follows all outgoing links from a bookmark. Admittedly, Page mentions a recursive **definition of the term rank**. “This implies a recursive definition of rank: the rank of a document is a function of the ranks of the documents that cite it.” Page Col 2, Line 67 However, the fact that Page uses a recursive definition for a term has nothing to do with how authority weights are distributed according to Page. In order compute the PageRank vector i.e. distribute the authority weights, Page teaches the use of iterative techniques. “The

ranks of documents may be calculated by an iterative procedure on a linked database.” Page Col 3 Lines 2-3

The actual computation is detailed in Page col 6 lines 12-21. The algorithm works by taking any initial set of ranks “At a step 101, an initial N-dimensional vector p_0 is selected.” and multiplying the initial set of ranks with a square matrix A raised to nth power (A’s rows and columns correspond to **all** the crawled web pages and the probabilities of transition from one to another) “An approximation p_n to a steady-state probability p_∞ in accordance with equation $p_n = A^n p_0$ is computed at a step 103. Matrix A can be an NxN transition probability matrix having elements $A[i][j]$ representing a probability of moving from node i to node j.” On the other hand Claim 7 teaches **of recursively distributing the page’s authority weight. Which includes establishing the page as a current page and repeatedly performing the following steps until an end condition is satisfied**, following an outgoing link from the current page to a next page that belongs to the collection; distributing a portion of the authority weight to the next page; and **establishing the next page as the current page**. Page in fact teaches away from using a recursive technique. Iterations globally treat all the nodes equally and spend most of the time on irrelevant nodes. In comparison, recursive method utilizes local propagation – it never touches certain distant nodes. This results in a computation of authority weights that is significantly faster than computing of a page-specific PageRank vector. Because Claim 7 contains features not taught or suggested by Page it is therefore not anticipated by Page et al. and Page. It is respectfully submitted that the rejections are withdrawn.

The Office Action alleges that Fig. 2 in Page teaches the feature “**wherein the step of recursively distributing the page’s authority weight includes establishing the page as a current page and repeatedly performing the following steps until an end condition is satisfied: a) following an outgoing link from the current page to a next page that belongs to the collection; b) distributing a portion of the authority weight to the next page; and c) establishing the next page as the current page;**”, however this is not the case. Fig. 2 in Page is a diagram of a three-document web illustrating the rank associated with each document. Fig. 2 does not illustrate how page rank is computed. In fact the rank of every page in Fig. 2 is established by setting up and solving a system of equations using inspection. “ $r(A)=r(B) \dots r(B)=r(A)/2 \dots r(C)=r(B)+r(A)/2 \dots$ In this simple illustrative case we can see by inspection that $r(A)=0.4$, $r(B)=0.2$, and $r(C)=0.4$.” Page col. 4 lines 41-64.

Based on the foregoing, Page fails to teach at least several features of Claim 7 and thus fails to teach all the features of Claim 7. By their nature dependent Claims 8-9 and 12-14 limit the scope of independent Claim 7. Because it was shown that independent Claim 7 contains features not taught by the cited prior art reference, reconsideration and removal of these rejections is respectfully requested.

Issue 4 – Claims 10-11

By their nature dependent Claims 10-11 limit the scope of independent Claim 7. Because it was shown that independent Claim 7 contains features not taught by the cited prior art reference, reconsideration and removal of rejections based on 35 U.S.C. § 103(a) is respectfully requested.

CONCLUSION

For at least the reasons above, the Applicants respectfully request that the rejections of all the pending claims be reversed.